

ABSTRACT OF THE DISCLOSURE

First channel waveguides 102₁ to 102₃ of an array waveguide grating are connected via a first to a third exponential function shape optical waveguide 111₁ to 111₃,
5 to a first sector-shape slab waveguide 105. In a second boundary part 109 which is disposed symmetrically with a first boundary part 108 via a channel waveguide array 104, second channel waveguides 103₁ to 103₃ are connected via a first to a third taper shape optical waveguide 112₁,
10 to 112₃ to a second sector-shape slab waveguide 106. By adopting exponential function shape optical waveguides 111 at least partly, the optical frequency characteristics can be improved compared to the case of the second degree function shape, and also the degree
15 of freedom can also be improved compared to the case of the rectangular shape.